

What is Claimed Is:

1. A support structure comprising:

5 a pair of side rails, each comprising an upper portion, a middle portion, and a lower portion;

a pair of cross-bars connecting said pair of side rails and crossing each other at a location between at least one of said lower portions, said middle portions and said upper portions of said side rails; and

a plurality of transverse wires extending between said pair of side rails.

10 2. The support structure as in claim 1 wherein said pair of cross-bars are fixedly attached to said pair of side rails with clips.

3. The support structure as in claim 1 wherein said pair of cross-bars are wound around said pair of side rails to fixedly attach.

15 4. The support structure as in claim 1 wherein said pair of cross-bars incorporate angled portions.

5. The support structure as in claim 1 wherein said transverse wires incorporate angled portions.

6. The support structure as in claim 1 wherein said transverse wires are wound around said side rails to fixedly attach.

20 7. The support structure as in claim 1, further comprising a seat frame, wherein said support structure is suspended in said seat frame.

8. The support structure as in claim 1 wherein one or a plurality of said transverse wires extend laterally beyond said side rails after having been wound around said wires.

9. The support structure as in claim 8, further comprising a seat frame wherein one or a plurality of said transverse wires extending beyond said side rails connects to said seat frame.

10. The support structure as in claim 1 wherein one or a plurality of links are fixedly attached to said side rails.

11. The support structure as in claim 10 further comprising a seat frame wherein one or a plurality of said links fixedly attach to said seat frame.

12. The support structure as in claim 1, further comprising a central longitudinal cord, said central longitudinal cord is fixedly attached to the mid points of said transverse wires.

13. The support structure as in claim 1, further comprising an actuator assembly operatively connected to said side rails.

14. The support structure as in claim 1, further comprising a pair of brackets, wherein one of said brackets is fixedly attached to one of said side rails.

15. The support structure as in claim 14, further comprising a pair of Bowden cables; wherein each of said Bowden cables has a first end and a second end and each of said first ends are slidably inserted through one of said brackets.

16. The support structure as in claim 15, further comprising an actuator, wherein said second ends of said Bowden cables are fixedly attached to said actuator.

17. The support structure as in claim 1, wherein the average bending stiffness of said pair of cross-bars is greater than the average bending stiffness of said transverse wires.

18. The support structure as in claim 1, wherein the average bending stiffness of one or a plurality of said transverse wires is greater than the average bending stiffness of other said transverse wires.

19. The support structure as in claim 1, wherein said pair of cross-bars are extensions of at least one of said upper portion and lower portion of said side rails.

20. A support structure comprising:

a first side rail and a second side rail, each comprising a first portion and a second portion;

a first cross-bar connecting said first portion of said first side rail to said second portion of said second side rail;

a second cross-bar connecting said first portion of said second side rail to said second portion of said first side rail;

a plurality of transverse wires extending between said pair of side rails.

21. The support structure as in claim 20 wherein said first cross bar and said second cross-bar are fixedly attached to said first side rail and said second side rail with clips.

22. The support structure as in claim 20 wherein said first cross bar and said second cross-bar are wound around said first side rail and said second side rail to fixedly attach.

23. The support structure as in claim 22 wherein said transverse wires incorporate angled portions.

24. The support structure as in claim 20 wherein said first cross bar and said second cross bar incorporate angled portions.

25. The support structure as in claim 20 wherein said transverse wires are wound around said first side rail and said second side rail to fixedly attach.

26. The support structure as in claim 20, further comprising a seat frame, wherein said support structure is suspended in said seat frame.

5 27. The support structure as in claim 20 wherein one or a plurality of said transverse wires extend laterally beyond said first side rail and said second side rail after having been wound around said first side rail and said second side rail.

10 28. The support structure as in claim 27, further comprising a seat frame wherein one or a plurality of said transverse wires extending beyond said first side rail and said second side rail connects to said seat frame.

29. The support structure as in claim 20 wherein one or a plurality of links are fixedly attached to said first side rail and said second side rail.

30. The support structure as in claim 29 further comprising a seat frame wherein one or a plurality of said links fixedly attach to said seat frame.

15 31. The support structure as in claim 20, further comprising a central longitudinal cord, said central longitudinal cord is fixedly attached to the mid points of said transverse wires.

32. The support structure as in claim 20, further comprising an actuator assembly operatively connected to said first side rail and said second side rail.

20 33. The support structure as in claim 20, further comprising a pair of brackets, wherein one of said brackets is fixedly attached to one of said first side rail and said second side rail.

34. The support structure as in claim 33, further comprising a pair of Bowden cables; wherein each of said Bowden cables has a first end and a second end and each of said first ends are slidably inserted through one of said brackets.

35. The support structure as in claim 34, further comprising an actuator, wherein said second ends of said Bowden cables are fixedly attached to said actuator.

36. The support structure as in claim 20, wherein the average bending stiffness of said first cross-bar and said second cross-bar is greater than the average bending stiffness of said transverse wires.

37. The support structure as in claim 20, wherein the average bending stiffness of one or a plurality of said transverse wires is greater than the average bending stiffness of other said transverse wires.

38. The support structure as in claim 20, wherein said first cross-bar and said second cross are extensions of one of said first portion and said second portion of one of said first side rail and second side rail.

39. A support structure comprising:

a pair of side rails, wherein each of said side rails have a first end and second end and said second ends are angled and fixedly attached to said opposite lateral wire to form an X-shape;

a plurality of transverse wires, said transverse wires having first and second ends wherein one of said ends is fixedly attached to one of said side rails and the other said end is fixedly attached to other said side rail;

a central longitudinal cord, said central longitudinal cord is fixedly attached to the mid points of said transverse wires;

a pair of brackets, wherein one of said brackets is fixedly attached to one of said side rails;

5 a pair of Bowden cables; wherein each of said Bowden cables has a first end and a second end and each of said first ends are slidably inserted through one of said brackets; and

an actuator, wherein said second ends of said Bowden cables are fixedly attached to said actuator.

40. The support structure as in claim 39, wherein said second ends of said side rails are
10 fixedly attached to other said side rail with clips.

41. The support structure as in claim 39, wherein said second ends of said side rails are wound around said other side rail to fixedly attach.

42. The support structure as in claim 39 wherein said transverse wires incorporate angled portions.

15 43. The support structure as in claim 39 wherein said pair of side rails incorporate angled portions.

44. The support structure as in claim 39 wherein said transverse wires are wound around said pair of side rails to fixedly attach.

45. The support structure as in claim 39, further comprising a seat frame, wherein said
20 support structure is suspended in said seat frame.

46. The support structure as in claim 39 wherein one or a plurality of said transverse wires extend laterally beyond said pair of side rails after having been wound around said pair of side rails.

47. The support structure as in claim 46, further comprising a seat frame wherein one or a plurality of said transverse wires extending beyond said pair of side rails is fixedly connected to said seat frame.

48. The support structure as in claim 39 wherein one or a plurality of links are fixedly attached to said pair of side rails.

49. The support structure as in claim 48 further comprising a seat frame wherein one or a plurality of said links are fixedly attached to said seat frame.

50. The support structure as in claim 39, wherein the average bending stiffness of said transverse wires is less than the average bending stiffness of said pair of side rails.

51. The support structure as in claim 39, wherein the average bending stiffness of one or a plurality of said transverse wires is greater than the average bending stiffness of other said transverse wires.

52. A support structure comprising:

a pair of side rails, each having an upper portion, a middle portion, and a lower portion;

a cross bar in an X shape extending between said side rails; and

a plurality of transverse wires extending between said pair of side rails.